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SUMMARY

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THE IMPROVEMENT OF THE QUALITY OF TROPICAL VEGETABLE OILS

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B. Sc., Ph. D., A. R. I. C.

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The Improvement of the Quality of Tropical Vegetable Oils

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Summary

This paper illustrates by reference to the production of palm, coconut and groundnut oils, improvements in the quality of vegetable oils produced in tropical territories which can follow from the use of better processing techniques.

Although the quality of palm oil exported from Nigeria during the past 12 years has greatly improved with regard to its acidity so that the proportion of edible grade oil (containing less than 5 per cent free fatty acid calculated as palmitic acid on arrival in the United Kingdom) has increased from 0.2 per cent of the total palm oil sold in 1950 to over 80 per cent in 1961, the bleachability of the oil has not improved to the same extent. Hence Nigerian palm oil suffers a discount on the United Kingdom market (often amounting to 30 shillings per ton) in favour of oil from more highly developed territories. Studies in the Tropical Products Institute indicated that palm oil is more difficult to bleach when it becomes oxidised and that oxidation of the oil could occur both in the fruit, before sterilization, through the action of lipoxidases and, after extraction, through atmospheric oxidation catalysed by the presence of dissolved metals. It has been demonstrated that oil extracted from carefully harvested Nigerian fruit can have a bleachability which is at least as good as, if not superior to that of commercial oil from Malaya or Indonesia. The following suggestions are made for ensuring a product of good bleachability.

1. Before extraction:

   (a) Avoid bruising fruit during harvesting.
   (b) Sterilize with minimum delay.
   (c) Sterilize on the bunch.

2. After extraction:

   (a) Avoid metallic contamination, particularly contact with copper and rusty iron.

   (b) Avoid undue heating of the oil in the presence of air.

An extraction procedure under development at the West African Institute for Oil Palm Research, Benin Nigeria, is referred to.

The production of good quality copra, which is necessary in order to produce a good quality of crude coconut oil, depends largely upon proper and adequate drying during its preparation. Moisture is a prime factor in the deterioration of copra since if above about 9 per cent is present, progressive deterioration due to attack by bacteria, yeast, moulds, insects and mites occurs and such impaired copra yields

oil of high free fatty acid content and dark colour. The use of artificial copra driers of the indirect type normally give the best quality product and can be constructed almost entirely locally. There are various field methods for determining the moisture content of the copra and attention is drawn to a moisture meter recently developed by the Pest Infestation Laboratory, Slough, Bucks, which has been tried out and has shown promise in various copra territories. Extraction of oil from the fresh coconuts has been carried out commercially in the Philippines and might be of great value to under-developed territories provided there was an outlet for the by-product.

In Nigeria, up to about seven years ago, nearly all the groundnuts for crushing were decorticated by pounding the pods in a household mortar, which resulted in only about one-third of the kernels remaining whole. Kernel breakage has been shown to be one of the main factors contributing to increase in acidity on storage, and the widespread introduction of hand decortication machines, for which the Tropical Products Institute has been largely responsible, has reduced this so that today, practically the whole decorticated crop contains at least 70 per cent of whole nuts. There has been a steady decrease in the acidity of the exported nuts, from 5.07 per cent in the 1954-55 season, when these decorticators were first introduced down to 1.46 per cent for the 1960-61 season. It has been estimated that this improvement amounts to a saving of over £1.000.000 for the 1960/61 season through the decreased refining losses for the oil.

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